

PATENT SPECIFICATION

(11) 1 462 926

1 462 926

- (21) Application No. 27000/74 (22) Filed 18 June 1974
 (44) Complete Specification published 26 Jan. 1977
 (51) INT CL² B23B 5/16
 (52) Index at acceptance
 B3T 4A8G 4B35



(54) A DEVICE FOR CHAMFERING THE END FACES OF ROUND TUBES

(71) I, PER SOMMER of
 Vingekrogen 3, 2730 Herlev, København,
 Denmark, of Danish nationality, do hereby
 declare the invention, for which I pray that
 a patent may be granted to me, and the
 method by which it is to be performed, to
 be particularly described in and by the
 following statement:—

This invention relates to a device for
 chamfering the end faces of circularly
 cross-sectioned tubes, the device being
 particularly, but not exclusively, suitable
 for chamfering the ends of tubes made of
 plastics materials.

A known tool for this purpose consists of
 a cylindrical member which fits into the tube
 in question and is provided with a cutting
 edge for chamfering the tube internally,
 externally or both, when the tool is turned
 in relation to the tube. Thus, a separate tool
 is required for each size of tube.

Another known tool is provided with a
 conical number of different sizes of tube.
 However, use of this tool entails a risk of
 the member being held in an oblique
 position in the tube so that the chamfering
 is uneven.

According to the invention, a device is
 provided for chamfering an end face of a
 circularly cross-sectioned tube comprising
 a block provided with at least one
 chamfering tool and a plurality of parallel-
 sided circular slots corresponding to the
 desired tube dimension. Preferably the slots
 have a common tangent plane at the
 position of the chamfering tool.

In each of these circular slots, the end of
 a tube having a certain diameter and wall
 thickness can be rotatably received. The
 tube position is maintained constant in
 relation to the chamfering tool, as it is guided
 internally as well as externally. After the
 chamfering tool has been adjusted suitably,
 an accurate chamfering of the desired
 width can be obtained by rotating the tube
 in the correct slot. The slot having the
 greater diameter will also preferably have
 the greatest width, corresponding to the
 largest wall thickness, and in the common

tangent plane the width of the slot will thus
 be maximum. However, this does not affect
 the guidance of tubes with smaller
 dimensions, as these are guided sufficiently
 well in the corresponding slots which are
 accurately shaped to the respective tube
 size, the tube being guided over at least
 three quarters of its periphery.

If the tube dimensions are close to each
 other, it may be impossible to make slots
 for each tube dimension, as the slots would
 join each other so much that the guidance
 of the tube ends would be inadequate.
 However, this problem may be solved,
 according to the invention, without the
 necessity of using two or more different
 devices, since the block may have two or
 more chamfering tools with respective
 groups of circular slots, the groups being
 arranged to intersect each other.

In most cases, the number of chamfering
 tools will, for reasons of design, be limited
 to two. The second chamfering tool is
 preferably positioned in such a way that a
 substantially right-angled intersection
 between the slots belonging to the two
 groups is obtained. If, for example, the
 block is circular, the two chamfering tools
 should desirably be placed diametrically
 opposite one another. In this case, the
 guidance of each tube end will be fully
 efficient even if the corresponding slot is
 broken at certain places by intersection
 with the slots associated with the second
 chamfering tool.

A change from internal to external
 chamfering or vice versa can easily be
 obtained since the chamfering tool is
 preferably received in a rectangular hole in
 the block. When the chamfering tool is
 removed, turned through 180° and inserted
 again into the hole, the cutting edge will be
 orientated oppositely, i.e. the edge will face
 outwardly for chamfering the inside of the
 tube end, or inwardly for chamfering the
 outside of the tube end. After the change
 the tube has to be rotated in the opposite
 direction to that previously used, to
 chamfer the opposite edge of the tube end.

Best Available Copy

An infinite adjustment of the width of the chamferings may be obtained according to the invention because the axis of the rectangular hole for the chamfering tool is substantially parallel to the sides of the circular slots, and the chamfering tool is slidable in the hole and is fixable in any axial position. When the chamfering tool is slid axially, the width of the chamfering will vary in a stepless way.

The invention will be explained in more detail in the following description, with reference to the drawing, in which:—

Fig. 1 shows a chamfering device according to the invention, seen from one end;

Fig. 2 is a lateral view of the same, partly in section along the line II—II in Fig. 1.

The device consists of a cylindrical block 1, one end face of which is provided with a number of parallel-sided circular slots 16, 2, 3, 4 having a common tangent plane at the left side of the block 1. At this place is provided a chamfering tool 5 having a cutting edge 6. The chamfering tool 5 is inserted into a rectangular hole in the block 1, in which it is slidable and can be fixed at any desired adjusted position by means of a screw 7. In the projecting circumferential zone of the block 1, there is an obliquely directed slot 8, through which the chips produced by the chamfering process can be removed.

Diametrically opposite the chamfering tool 5 is placed a corresponding chamfering tool 9, the cutting edge 10 of which, however, lies at the outer side of the largest circular slot 4, so that this chamfering tool 9 serves to chamfer the tubes externally, while the chamfering tool 5 is intended for internal chamfering of tubes. At the chamfering tool 9, there is also an obliquely directed slot 15 in the circumferential zone of the block 1 for leading the chips away from the device. Associated with the chamfering tool 9 is another set of circular slots 12, 13, 14, which intersect the formerly mentioned slots 2, 3, 4. The slot 4 is also associated with the chamfering tool 9, as a tube end placed in the slot 4 can be chamfered externally by the chamfering tool 9, and internally by the chamfering tool 5. The two chamferings, however, cannot be made at the same time, as the direction of rotation of the tube is different in the two cases.

At the rear side, the device is provided with a handle 17, by means of which the device can be held in a fixed position. The device may be made from one piece of silumene or plastic.

In Figure 1 is shown a portion of a tube 18 inserted into and guided in the slot 2 and

being chamfered internally by the chamfering tool 5, when it is rotated in the direction indicated by the arrow. If an external chamfering of this tube is also wanted, the chamfering tool 5 is removed from the rectangular hole in the block 1, rotated 180° about its own longitudinal axis, and inserted again in the hole, so that the cutting edge 6 will turn the opposite way and will be positioned further away from the centre of the block 1. The chamfering tool 5 is fixed again by means of the screw 7, and the device is then ready to chamfer the tube 18 externally, when the tube is rotated in a direction opposite to that indicated by the arrow.

If the width of the chamfering is to be changed, this may be done by sliding the chamfering tool 5 or 9 in its longitudinal direction and fixing it in the new position by means of the screw 7 or 11. A change of the chamfering angle can only be obtained by grinding the chamfering tool 5 and 9 in such a way that the cutting edge 6 or 10 makes another angle with the parallel sides of the circular slots 16, 2, 3, 4, 12, 13, 14.

Instead of the handle 17, the device may be provided with means for securing it to a vertical or horizontal surface.

WHAT I CLAIM IS:—

1. A device for chamfering an end face of a circularly cross-sectioned tube, comprising a block provided with at least one chamfering tool and a plurality of parallel-sided circular slots corresponding to the desired tube dimension.

2. A device according to Claim 1, in which the slots are arranged to have a common tangent plane at the position of said chamfering tool.

3. A device according to Claim 1 or 2, wherein the block has two or more chamfering tools, each tool having a respective group of parallel-sided circular slots with the groups intersecting each other.

4. A device according to Claim 1, 2 or 3, wherein the or each chamfering tool, as the case may be, is received into a rectangular hole in the block.

5. A device according to Claim 4, wherein the axis of the or each rectangular hole, as the case may be, is substantially parallel to the axis of the slots, the or each chamfering tool being slidable in its hole and fixable in any axial position.

6. A device according to any preceding claim, wherein the block is provided with a handle such that the device may be held in a fixed position.

7. A device according to any of Claims 1 to 5, wherein the device is arranged to be

securable to a vertical or a horizontal surface.

8. A device according to Claim 7, substantially as described, with reference to the accompanying drawing.

5

POLLAK, MERCER & TENCH,
Chartered Patent Agents,
Audrey House, Ely Place,
London, EC1N 6SN,
Agents for the Applicant.

Printed for Her Majesty's Stationery Office, by the Courier Press, Leamington Spa, 1977
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from
which copies may be obtained.

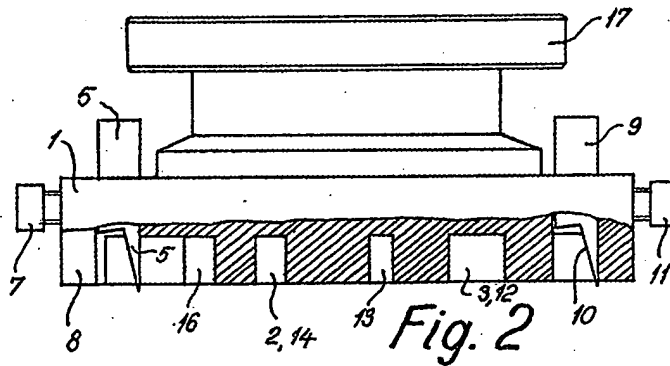
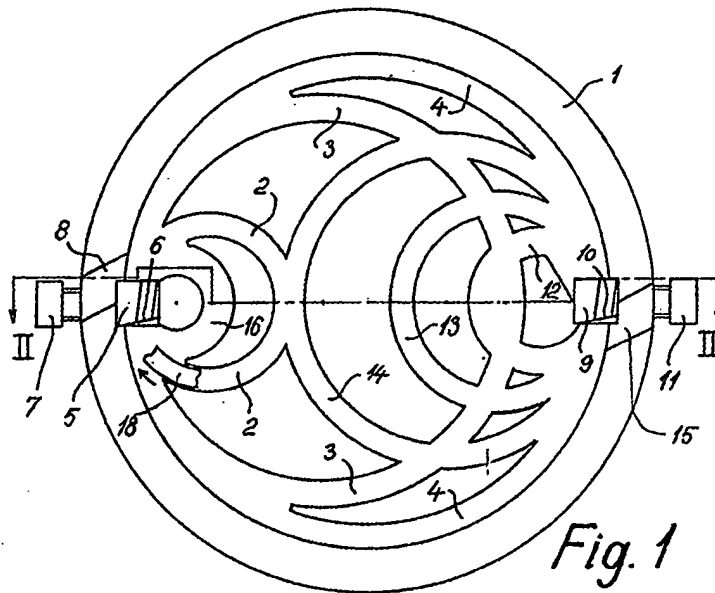
Best Available Copy

1462926

COMPLETE SPECIFICATION

1 SHEET.

This drawing is a reproduction of
the Original on a reduced scale



Best Available Copy